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INSTRUCTION MANUAL

kepco inc.®

131-38 SANFORD AVENUE • FLUSHING 52, N. Y.
Area Code 212 IN 1-7000 • TWX # NY 4-5196

INSTRUCTION MANUAL:

BBC 525-2/4

MODELS SM 75-5X
and SM 75-5MX

SERIAL NO. .....

KEPCO, INC.
131 - 38 Sanford Avenue
Flushing 52, New York

Kepco, Inc.
Flushing, New York

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SECTION A. SPECIFICATIONS AND DESCRIPTION

A-1. ELECTRICAL AND PHYSICAL SPECIFICATIONS.

....DC OUTPUT:

0-75 volts; continuously variable output control.

0-5 amperes, continuous duty.

....AC INPUT:
105-125 volts, 60 ± 1/2 cps; 6.1 amperes, maximum.

....REGULATION -

- LINE: Within 0.01% of the output voltage setting in the specified range for line change of 105-125 v ac.

- LOAD: Within 0.01% of the output voltage setting in the specified range, or 0.001 v, whichever is greater, for load change of 0-5 amperes. REMOTE ERROR SENSING feature provides means of maintaining specified regulation directly at load. (See Section C)

....RIPPLE:
Less than 0.001 volt rms.

....STABILITY:
Output voltage variation is less than 0.01% or 0.002 v, whichever is greater, over a period of 8 hours after unit has reached equilibrium. Approximately 3/4 hour is required for this unit to reach equilibrium from a "cold" start.

....OUTPUT IMPEDANCE:
Less than 0.02 ohm from DC to 1 KC.
Less than 0.2 ohm from 1 KC to 100 KC.

....RECOVERY TIME:
50 microseconds; defined as the time required for the output voltage to return to within 0.1 volt of the output voltage setting.

....TEMPERATURE COEFFICIENT:
Output voltage changes less than 0.01% per degree C.

....AMBIENT OPERATING TEMPERATURE:
-20 C to +50 C maximum.

....STORAGE TEMPERATURE:
-40 C to +85 C.

.... DIMENSIONS:
Height 5-1/4"; Width 19"; Depth 13-7/8" behind panel.

.... COLOR:
Kepco Standard Gray Hammertone.

.... METERS:
Furnished on units with suffix "M" following Model No.
Voltmeter 0-80 volts, 2-1/2".
Ammeter 0-5 amperes, 2-1/2".

A-2. TERMINALS AND CONTROLS -

- ON FRONT PANEL:

.... DC OUTPUT and GROUND binding posts, clearly marked. Output terminals isolated from chassis; either Positive or Negative terminal may be grounded.

.... VOLTAGE CONTROL, continuously variable, for setting output voltage.

.... POWER ON-OFF SWITCH.

- AT REAR OF UNIT:

.... DC OUTPUT and GROUND binding posts, clearly marked; connected internally to respective front panel binding posts.

.... REMOTE ERROR SENSING binding posts provide means of connecting output to maintain specified regulation directly at remote load terminals. (See Section C)

A-3. PROTECTIVE FEATURES -

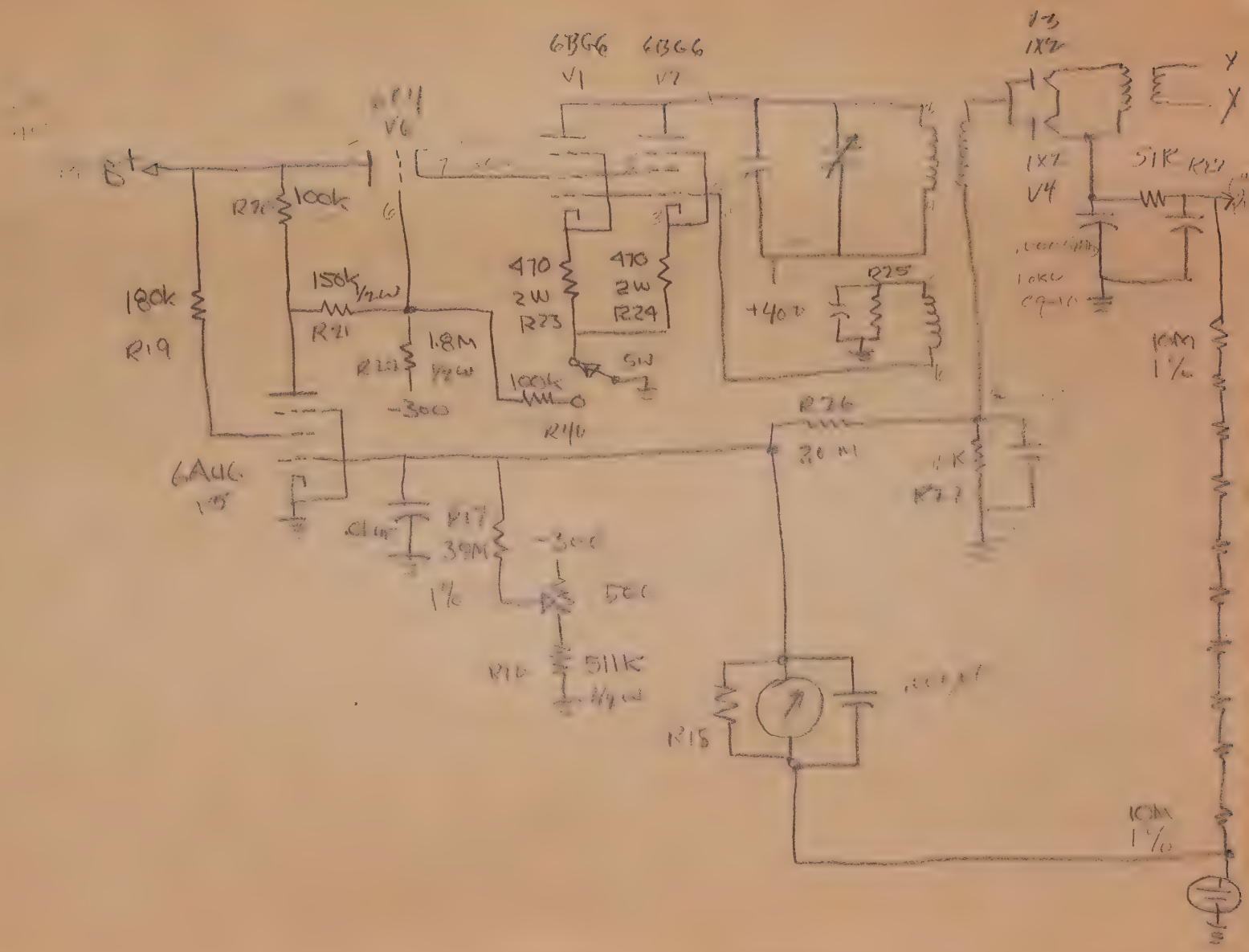
.... POWER INPUT FUSE (ac) on front panel.

.... DC OUTPUT FUSE on front panel.

.... REFERENCE FUSE (ac) for internal circuitry.

.... OVERLOAD PROTECTION:
Inherent current limiting action of Kepco "FLUX-O-TRAN" transformer permits momentary short circuit of output without damage to unit. Continuous overload or short circuit will open the DC OUTPUT FUSE.

.... OVER-TEMPERATURE PROTECTION:
Thermostat relay control turns unit OFF if temperature of PASS elements exceeds safe limit. Relay is reset by interrupting input power with ON-OFF switch on front panel, or by disconnecting line cord from power source.


6BG6
V1
6BG6
V2
6AU6
V3
6AU6
V4
6AU6
V5
6AU6
V6
100k
R18
180k
R19
150k 1/2W
R21
1.8M
1/2W
R20
-300
100k
R16
470
2W
R23
470
2W
R24
SW
+400
R25
R26
20 M
1K
R27
.01 μF
R17
39M
1%
-300
500
R14
511K
1/2W
R15
1-3
1X2
1X2
V4
51K
R22
10K
1%
10K
1%

SECTION B

BRIEF THEORY:

Two circuit schematic drawings titled "POWER UNIT" and "CONTROL UNIT" are included in the Reference Index of this instruction manual. These drawings contain designations corresponding to the capitalized terms in the following discussion.

Some basic functional relationships in this power supply are illustrated in block Diagram B-1 (Page B-2A).

The POWER UNIT includes:

DC SOURCES:

....MAIN SUPPLY - (consisting of a Kepco "Flux-O-Tran" transformer, full wave bridge rectifier, and capacitive filter) provides line regulated DC power for the output, via the PASS CIRCUITRY.

....AUXILIARY SUPPLIES: COLLECTOR SUPPLY (negative full wave rectified) for PASS CIRCUITRY driver stages not connected to MAIN SUPPLY; I_{co} SUPPLY (full wave rectified) compensates for spurious biasing effects of collector leakage current; RETURN SUPPLY (full wave rectified) acts as leakage current path for series pass transistors and as bleed path to provide minimum operating current for pass transistors; CONTROL UNIT SUPPLY (full wave rectified).

PASS CIRCUITRY:

The power transistors which function as pass elements (i.e. are in series with the load) may be regarded effectively as variable resistors (or conductors) controlled by a CONTROL SIGNAL. The current "passed" by these elements is a function of the emitter-base bias. The CONTROL SIGNAL is applied to the base terminal; hence a negative CONTROL SIGNAL will aid the forward conduction of a PNP transistor while a positive CONTROL SIGNAL will reduce the forward conduction. In response to the CONTROL SIGNAL the pass elements effect a current and voltage distribution in the main DC loop which holds the output voltage constant.

The CONTROL UNIT includes:

REFERENCE CIRCUITRY:

The function of the REFERENCE CIRCUITRY is to maintain a precise, stable, voltage standard for the COMPARISON AMPLIFIER.

COMPARISON AMPLIFIER:

The COMPARISON AMPLIFIER is essentially a series of cascaded transistor amplifiers which boost the differential error signal produced in the COMPARISON BRIDGE to a level sufficient to drive the PASS CIRCUITRY. The COMPARISON AMPLIFIER is connected across the COMPARISON BRIDGE from the junction of the VOLTAGE CONTROL and the REFERENCE RESISTANCE to the junction of the REFERENCE DIODE and the negative output terminal (See Diagram on Page B-2A). This arrangement is similar to that of a null galvanometer across a Wheatstone bridge. Unbalance in the COMPARISON BRIDGE is amplified to produce a CONTROL SIGNAL of suitable magnitude and phase to effect corrective action by the PASS CIRCUITRY.

COMPARISON BRIDGE: (See Diagram B-2, Page B-2A).

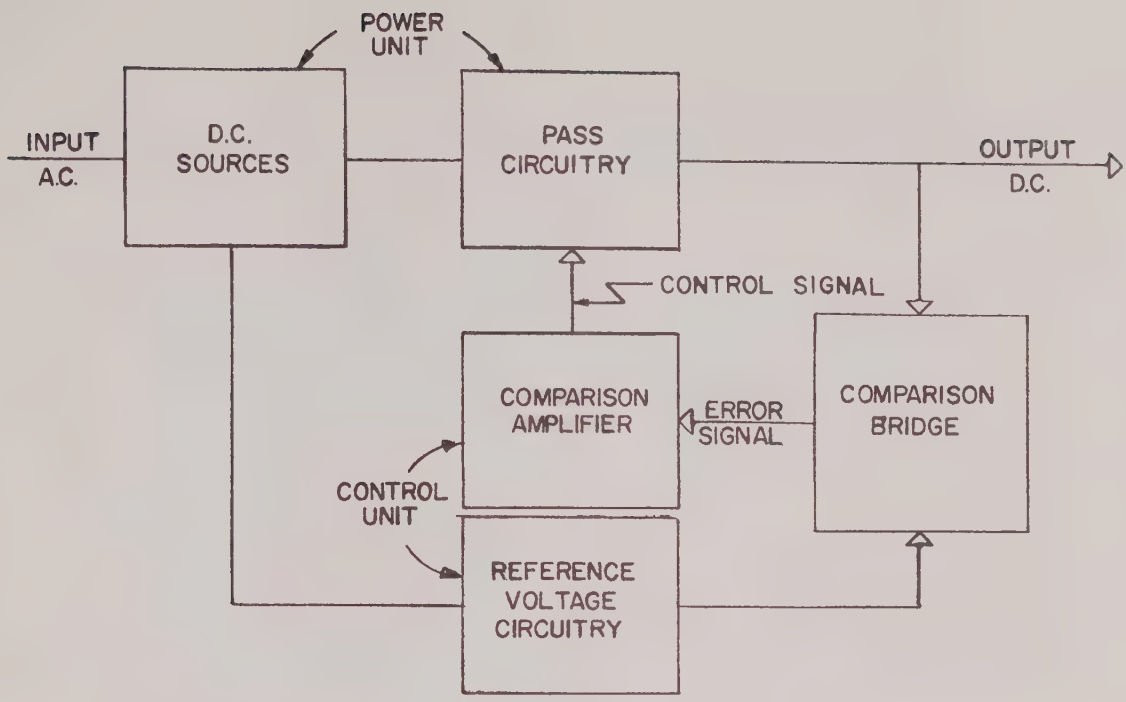
This bridge circuit implements the comparison between the OUTPUT VOLTAGE and the REFERENCE VOLTAGE. The signal produced by the comparison drives the COMPARISON AMPLIFIER.

Balance occurs in the Comparison Bridge when the following ratios are equal:

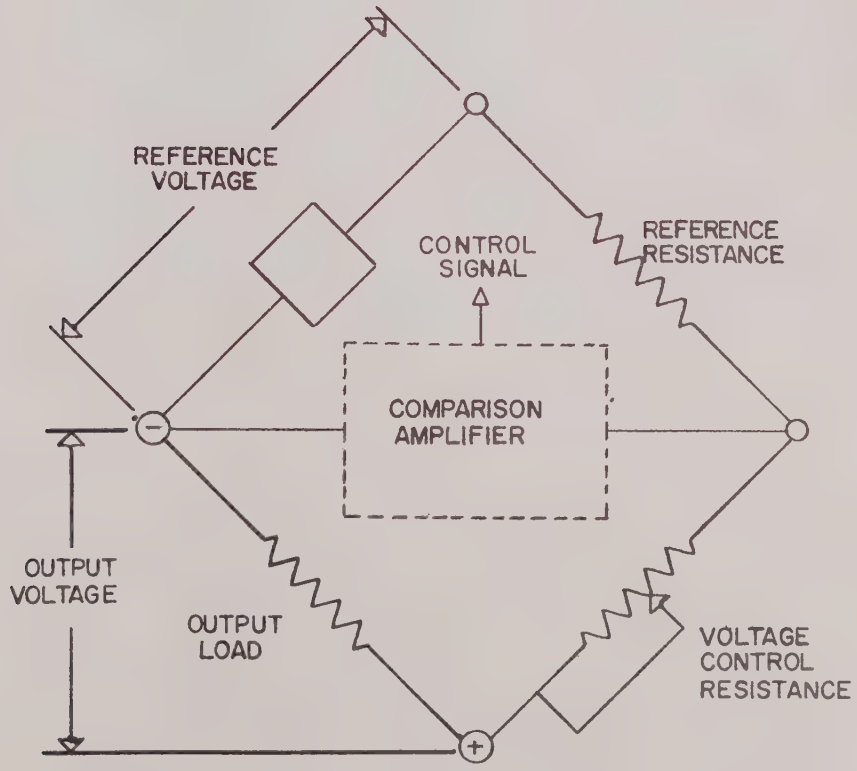
$$\frac{\text{Output Voltage}}{\text{Voltage Control Resistance}} = \frac{\text{Reference Voltage}}{\text{Reference Resistance}}$$

When, for example, the Comparison Bridge is unbalance by a decreasing output voltage drop across the load, it gives rise to a negative signal at the base of the COMPARISON FOLLOWER in the COMPARISON AMPLIFIER circuit. This signal is amplified in cascade and communicated to the pass elements as a negative base input aiding their forward conduction and consequently increasing the output voltage.

A bridge unbalance caused by an increasing output voltage produces, of course, a chain of oppositely biased circuit responses which reduce the voltage across the load.



(DIAGRAM B-1) *VOLTAGE REGULATED POWER SUPPLY*



(DIAGRAM B-2) *COMPARISON BRIDGE*

This power supply is shipped without any internal packing material; and may be put into operation immediately. It is designed for rack and for bench use. Carrying handles are provided on front panel.

....INTIAL "TURN - ON" PROCEDURE:

1. Adjust VOLTAGE CONTROL to approximate mid-range position.
2. With POWER ON-OFF switch set in "OFF" position, connect line cord to 115 v ac, 60 cps input power. If outlet is not polarized use 3 to 2 - prong adapter supplied with unit.
3. Set POWER ON-OFF switch to "ON" position.
4. Adjust VOLTAGE CONTROL to obtain desired output voltage.

....GENERAL OPERATION:

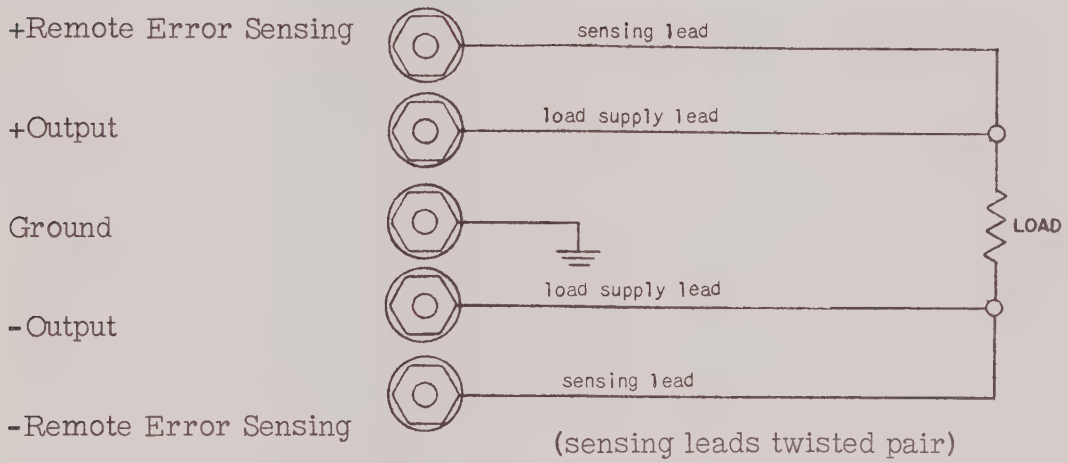
1. Once it has been determined that the unit is functioning satisfactorily, it is subsequently unnecessary to follow the INITIAL TURN-ON PROCEDURE.
2. The VOLTAGE CONTROL may be left fixed at any setting and the power turned "ON" and "OFF" without any harmful effects.

....MAINTENANCE AND REPAIR:

1. Under normal operating conditions, no mechanical maintenance of any kind should be required. Conservatively rated electrical components assure long trouble-free operating life.
2. Exceptional component accessibility, provided by resistor board construction and plug-in sub-assemblies, facilitates servicing, should it be required. It is emphatically recommended that trouble-shooting be handled by personnel highly familiar with transistor circuitry, - preferably with experience in closed-loop designs.
3. This unit should not be returned to the manufacturer without proper authorization and shipping instructions. In any correspondence with the factory regarding repair, the model, serial number, and symptoms of malfunction must be included.

REMOTE ERROR SENSING OPERATION

(Terminal Connections)



(sensing leads twisted pair)

(Procedure)

1. With AC input power disconnected, remove jumpers between plus and minus Output terminals and Remote Error Sensing terminals on the rear of the unit.

2. Using twisted pair wire, connect sensing leads from positive and negative Remote Error Sensing terminals to the load (observing polarities).

3. Using twisted pair wire, connect load supply leads from positive and negative Output terminals.

IMPORTANT NOTE: This unit should not be operated with Remote Error Sensing if the voltage drop across the load supply leads exceeds 0.5 volt (maximum) per lead at maximum rated output current.

SCHEMATIC NO.	QTY.	DESCRIPTION	MFRS. NAME & PART NO. (See Note)	KEPCO PART NO.
B201	1	Fan, Ventury	Rotron	149-0013
C201	1	Capacitor,Electrol. Can 1500, µf, 110W	Sangamo DCM	117-0259
C202	1	Capacitor,Electrol, Can 6000 µf, 110 W	Sangamo DCM	117-0265
C203	1	Capacitor,Paper Can Type 5 µf, 660 VAC	General Elec. 49F837	117-0293
C204	1	Capacitor,Mylar 1 µf, 200 V	Hopkins Eng. 1P2MK	117-0207
C301	1	Capacitor,Ceramic 0.02 µf, 500 V	Sprague 36C201A	117-0104
C302	1	Capacitor,Electrol. Pigtail 10 µf, 150 V	Industrial Cond. 10B912RM	117-0147
C401	1	Capacitor,Electrol, Pigtail 350 µf, 50 V	Industrial Cond. 1B844	117-0114
C402	1	Capacitor,Electrol, Pigtail 100 µf, 200 V	Industrial Cond. 20B317RM	117-0222
C403	1	Capacitor,Electrol, Pigtail 500 µf, 50 V	Industrial Cond. 1B1163RM	117-0221
C404	1	(Same as C403)		
C405	1	Capacitor,Ceramic 0.05 µf, 500 V	Sprague 36C142A1	117-0163
C406	1	(Same as C405)		
C502	1	Capacitor,Electrol, Pigtail 50 µf, 150 V	Industrial Cond. 15RM50	117-0127
C503	1	Capacitor,Mylar 0.1 µf, 600 V	Good-All 620S10406W	117-0068
CB101	1	Circuit Breaker 7.5 A 250 VAC	Wood Electric CB2307	127-0131
CR201	1	Rectifier,Silicon Stack	Kepco Inc.	124-0111
CR301	1	Rectifier,Silicon Pigtail	Automatic PT-5	124-0028
CR401,402	2	Rectifier,Silicon Pigtail	Columbus CEC105	124-0133
CR403,404	2	Rectifier,Silicon Pigtail	Automatic PT-5	124-0028

REPLACEMENT PARTS MAY BE ORDERED FROM KEPCO, INC. ORDERS SHOULD INCLUDE KEPCO PART NUMBER AND DESCRIPTION.

PLEASE NOTE: THE MANUFACTURER'S NAME AND PART NUMBER LISTED FOR EACH ITEM ON REPLACEMENT PARTS LISTS, REPRESENTS AT LEAST ONE SOURCE FOR THAT ITEM AND IS LISTED SOLELY FOR THE CONVENIENCE OF KEPCO EQUIPMENT OWNERS IN OBTAINING REPLACEMENT PARTS LOCALLY. WE RESERVE THE RIGHT TO USE EQUIVALENT ITEMS FROM ALTERNATE SOURCES. KEPCO, INC.

SCHEMATIC NO.	QTY.	DESCRIPTION	MFRS. NAME & PART NO. (See Note)	KEPCO PART NO.
CR405-408	4	Rectifier,Silicon Pigtail	Columbus CEC105	124-0133
F101	1	Fuse,Instantaneous	Bussman ABC-10	141-0014
F401	1	Fuse,Instantaneous	Bussman 2A250V	141-0012
*M101	1	Meter 80 VDC 2½"	General Electric 8DW91V231AS2	135-0189
*M102	1	Meter 5 ADC 2½"	General Electric 8DW91A227BT2	135-0171
PL101	1	Pilot Light	General Electric NE-51	153-0024
Q301	1	Transistor, PNP	Delco 2N1172	119-0034
Q302	1	Transistor, PNP	Tung-Sol 2N382	119-0022
R201	1	Resistor,Fixed,Power,Strip 1K ohm, 20 W	Ward Leonard 20S1000	115-0611
R202	1	(Same as R201)		
R203-205	3	Resistor,Fixed,Power,Strip 0.3 ohm, 40 W	Ward Leonard 2" stripohm	115-1018
R206	1	Resistor,Fixed,Power,Strip 25 ohm, 20 W	Ward Leonard 20S25	115-0757
R207	1	Resistor,Fixed,Power,Strip 3 ohm, 20 W	Ward Leonard 20S3	115-0726
R208	1	Resistor,Fixed,Power,Strip 1 K ohm, 30 W	Ward Leonard 30S1000	115-0975
R209	1	Resistor,Variable,Wire Wd. 10 K ohm, 2.5 W	General Radio 973-N	115-0894
R301	1	Resistor,Fixed,Molded 100 K ohm, ½ W	Allen Bradley EB1041	115-0809
R302	1	Resistor,Fixed,Molded 200 ohm ½ W	Allen Bradley EB2015	115-0538
R303	1	Resistor,Fixed,Molded 33 ohm, 2 W	Allen Bradley HB3305	115-1027
R304	1	Resistor,Fixed,Molded 5.6 K ohm ½ W	Allen Bradley EB5625	115-0559
R305	1	Resistor,Fixed,Molded 1 K ohm, 1 W	Allen Bradley GB1025	115-0960

*Metered Model only.

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SCHEMATIC NO.	QTY.	DESCRIPTION	MFRS. NAME & PART NO. (See Note)	KEPCO PART NO.
R306	1	Resistor,Fixed,Power,Axial 200 ohm, 3 W	Ward Leonard 3X200	115-0803
R307	1	Resistor,Fixed,Molded 100 ohm, ½ W	Allen Bradley EB1015	115-0341
R308	1	Resistor,Fixed,Molded 330K, ½ W	Allen Bradley EB3345	115-0250
R309	1	Resistor,Fixed,Power,Axial 1 K ohm, 5 W	Ward Leonard 5X1000	115-0512
R310	1	Resistor,Fixed,Molded 47 Ohm, ½ W	Allen Bradley EB4701	115-0718
R320	1	Resistor,Fixed,Axial 2.5 K 3 W	Ward Leonard 3X2500	115-0469
R501	1	Resistor,Fixed,Axial 50 ohm, 3 W	Ward Leonard 3X50	115-0641
R502	1	(Same as R501)		
R503	1	Resistor,Fixed,Molded 10 ohm, ½ W	Allen Bradley EB1001	115-0502
RL201	1	Relay	Kurman 3P-DT	140-0040
S101	1	Switch,Toggle SPST	Carling AA252-71-2	127-0107
T201	1	Transformer,Variable	Superior 011TU	175-0398
T202	1	Transformer,Flux-O-Tran	Kepco Magnetics 100-1209	100-1209
T401	1	Transformer	Kepco Magnetics 100-1179B	100-1179B
Transistor Assemblies:				
A901-903	3	Pass Transistor Assembly PO.2/SP67	Kepco Inc.	110-0124
		Includes the following:		
	1	Transistor, PNP	Motorola	119-0035
	1	Resistor,Fixed,Power Axial 0.2 ohm,3 W	Ward Leonard 3 X 0.2	115-0450

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SCHEMATIC NO.	QTY.	DESCRIPTION	MFRS. NAME & PART NO. (See Note)	KEPCO PART NO.
A904	1	Pass Transistor Assembly PO.2TC/SP67	Kepco	110-0125
		Includes the following:		
	1	Transistor,PNP	Motorola	119-0035
	1	Resistor,Power Axial 0.2 ohm, 3 W	Ward Leonard 3XO.2	115-0450
	1	Switch, Thermostat N.C.	Chatham DRSCORP 73C	127-0093
A905	1	Driver Transistor Assembly AO/441-10	Kepco	110-0114
		Includes the following:		
	1	Transistor,PNP	Delco	119-0016

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kepco inc. ® REPLACEMENT PARTS LIST

Control Unit, Model TRAM 31 Code 4-2062

SCHEMATIC NO.	QTY.	DESCRIPTION	MFRS. NAME & PART NO. (See Note)	KEPCO PART NO.
C1	1	Capacitor, Electrolytic 10 µf, 50v; Pigtail	Industrial 05RM10	117-0136
C2	1	Capacitor, Mylar 2 µf, 200v	Hopkins 2P2M	117-0129
C3	1	Capacitor, Mylar 0.5 µf, 200v	Hopkins	117-0123
CR1,2	2	Rectifier, Silicon, Pigtail 500 ma, 100 PIV	Transitron SL-91	124-0084
L1	1	Choke, RF 550 microhenry	Miller 4649	176-0046
Q1	1	Transistor, PNP Equal to 2N1172	Delco 119-0034	119-0034
Q2-6; 8,10	7	Transistor, PNP Equal to 2N382	Tung-Sol 119-0022	119-0022
Q7,9	2	Transistor,NPN	General Transistor 119-0007	119-0007
R1,5	2	Resistor, Fixed, Molded 3.3 K ohms, 1/2w; 5%	Allen Bradley EB3325	115-0452
R2, 14	2	Resistor, Fixed, Molded 2.7 K ohms, 1/2w; 10%	Allen Bradley EB2721	115-0560
R3,4	2	Resistor, Fixed, Precision 500 ohms, 1w; 1%	Sage Electronics SAIW	115-1192
R6,7	2	Resistor, Fixed, Molded 6.8 K ohms, 1/2w; 5%	Allen Bradley EB6825	115-0579
R8	1	Resistor, Fixed, Precision 15K, 1/2w; 1%	Dale WS 1/2	115-0646
R9	1	Resistor, Power, Axial, WW 10 K ohm, 3w; 5%,LTC	Hardwick Hindle 9/16 GA	115-1162
R10	1	Resistor, Power, Axial 2.5 K ohms, 3w; 5%, WW	Ward Leonard 3X2500	115-0469
R11	1	Resistor, Fixed, Precision 400 ohms, 1w; 1%	Sage Electronics SAIW	115-1191

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SCHEMATIC NO.	QTY.	DESCRIPTION	MFRS. NAME & PART NO. (See Note)	KEPCO PART NO.
R12 *Note 1	*	Resistor, Fixed, Precision 800 ohms, 1/2w; 1%	Sage Electronics 1050S	115-1193
R12 *Note 2	*	Resistor, Fixed, Precision 700 ohms, 1/2w; 1%	Sage Electronics 1050S	115-1194
R12 *Note 3	*	Resistor, Fixed, Precision 900 ohms, 1/2w; 1%	Sage Electronics 1050S	115-1195
R13	1	Resistor, Power, Axial 500 ohms, 3w; 5%, LTC	Ward Leonard 3X500 LTC	115-0938
R15	1	Resistor, Fixed, Molded 20 ohms, 1/2w; 5%	Allen Bradley EB2005	115-0508
R16	1	Resistor, Fixed, Molded 160 K ohms, 1/2w; 5%	Allen Bradley EB1645	115-1024
R17	1	Resistor, Fixed, Molded 10 K ohm, 1/2w; 5%	Allen Bradley EB1035	115-0249
R18	1	Resistor, Fixed, Molded 300 ohms, 1/2w; 5%	Allen Bradley EB3015	115-0783
R19	1	Resistor, Power, Axial, WW 250 ohms, 3w; 5%, LTC	Hardwick Hindle 9/16 GA	115-1161
R20,24	2	Resistor, Power, Axial, WW 10 ohms, 3w; 5%, LTC	Hardwick Hindle 9/16 GA	115-1160
R21	1	Resistor, Fixed, Molded 100 ohms, 1w; 5%	Allen Bradley GB1015	115-0902
R22	1	Resistor, Variable, Multiturn 200 ohms, 1/4 w; 10%, 25 t	Bourns Labs Trimit 271-1-201	115-0863
R23	1	Resistor, Fixed, Molded 180 ohms, 1/2w; 5%	Allen Bradley EB1815	115-0807
R25	1	Resistor, Fixed, Molded 10 ohms, 1/2w; 10%	Allen Bradley EB1001	115-0818
RD1	1	Reference Diode Zener, 6.2v, 10 ma	Hoffman IN429	121-0001

*Note 1- R12 is 800 ohms, Part no. 115-1193 in following Models:
SM 14-7X; SM 14-15X; SM 14-30X; SM 36-5X; SM 36-10X; SM 36-15X

*Note 2- R12 is 700 ohms, Part no. 115-1194 in following Models:
SM 75-2X; SM 75-5X; SM 75-8X; SM 160-1X; SM 160-2X; SM 160-4X

*Note 3 - R12 is 900 ohms, Part no. 115-1195 in following Models:
SM 325-0.5X; SM 325-1X; SM 325-2X

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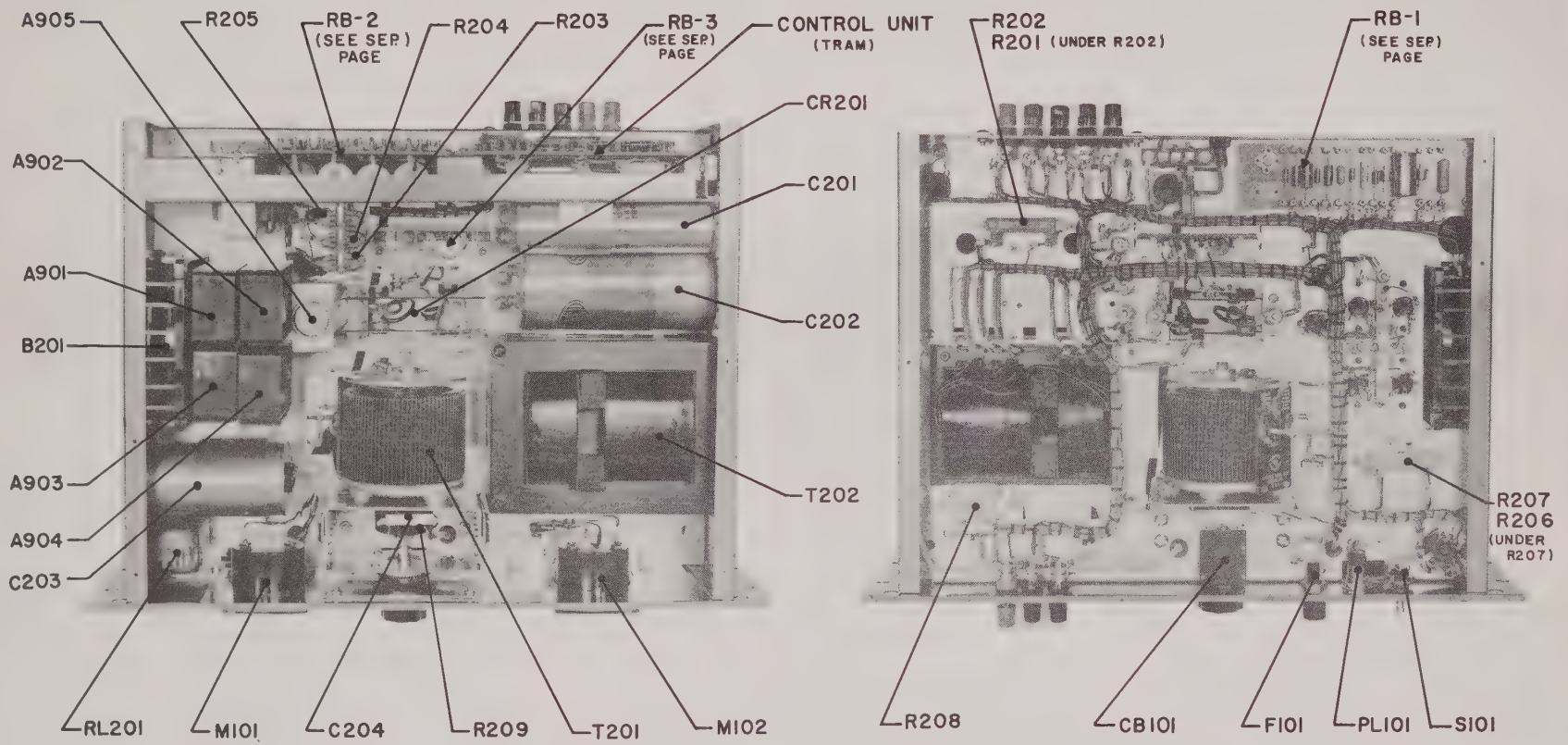
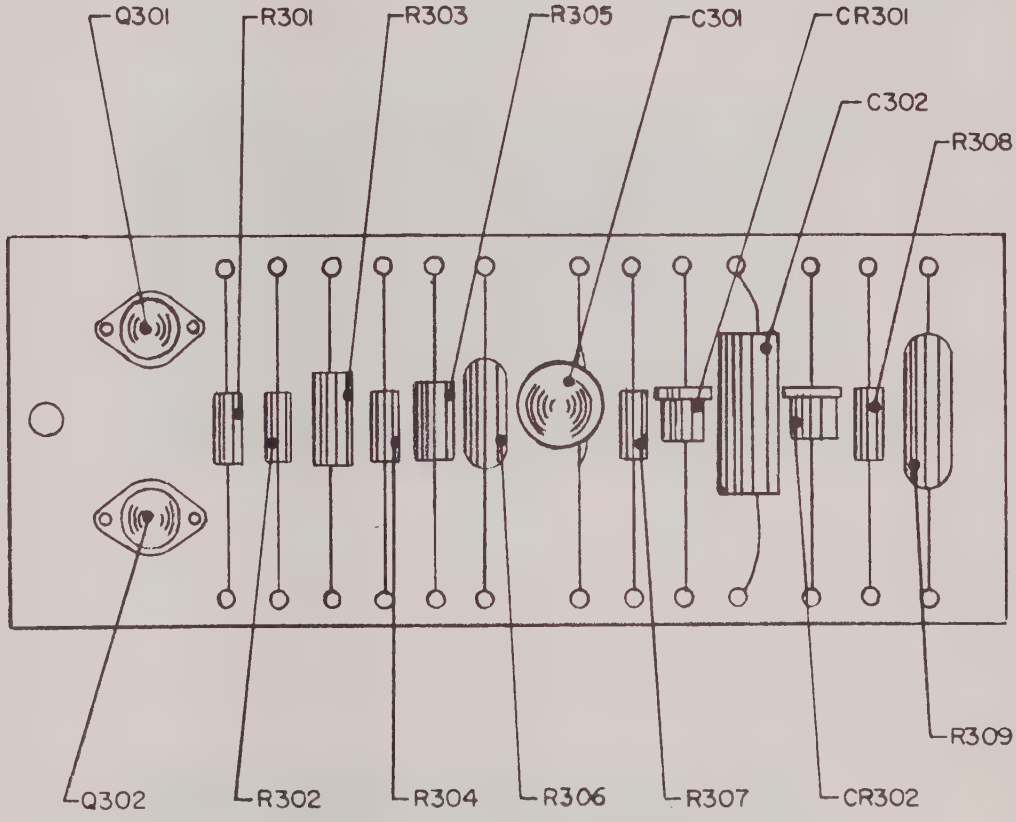
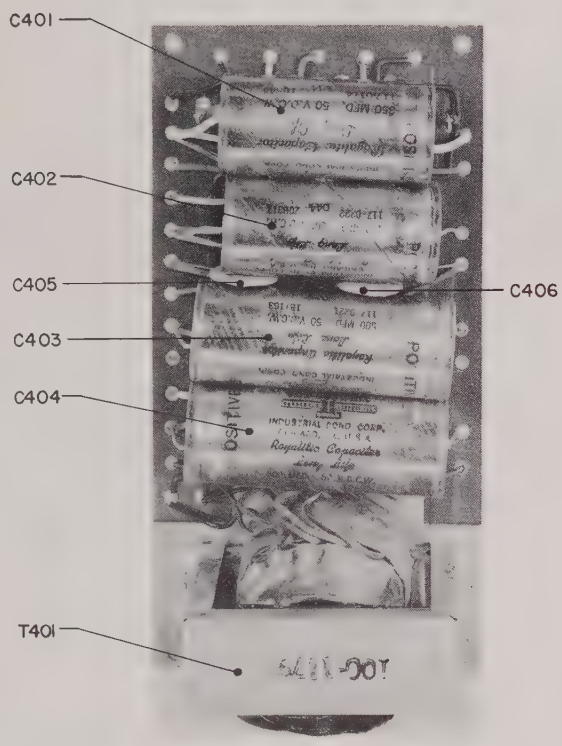


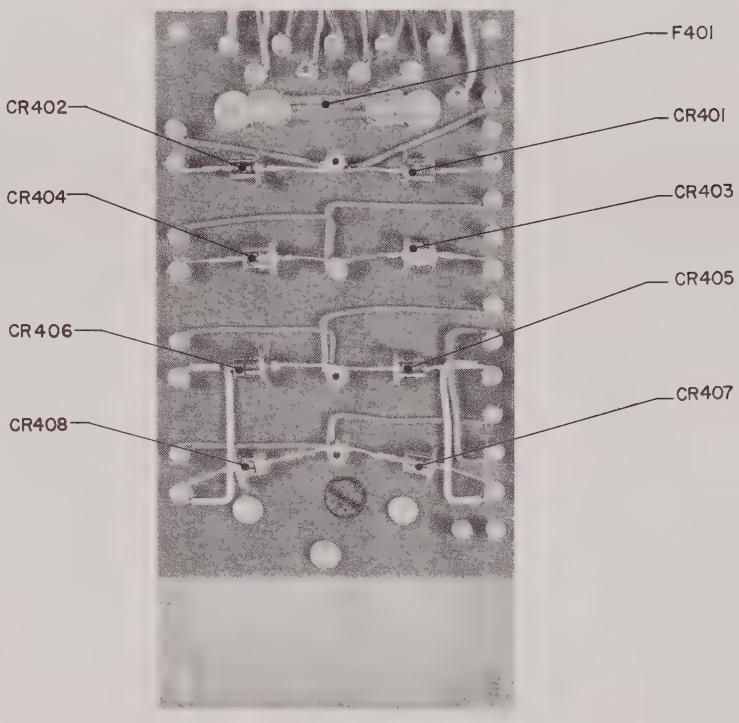
KEPCO INC.	
FLUSHING NEW YORK	
ITEM: POWER UNIT	DES. 12-15-61
	APPD.
MODEL SM-75-5	DFTM C. D.
DWG. No CM01250	CHKD M. R.



KEPCO INC.
FLUSHING NEW YORK

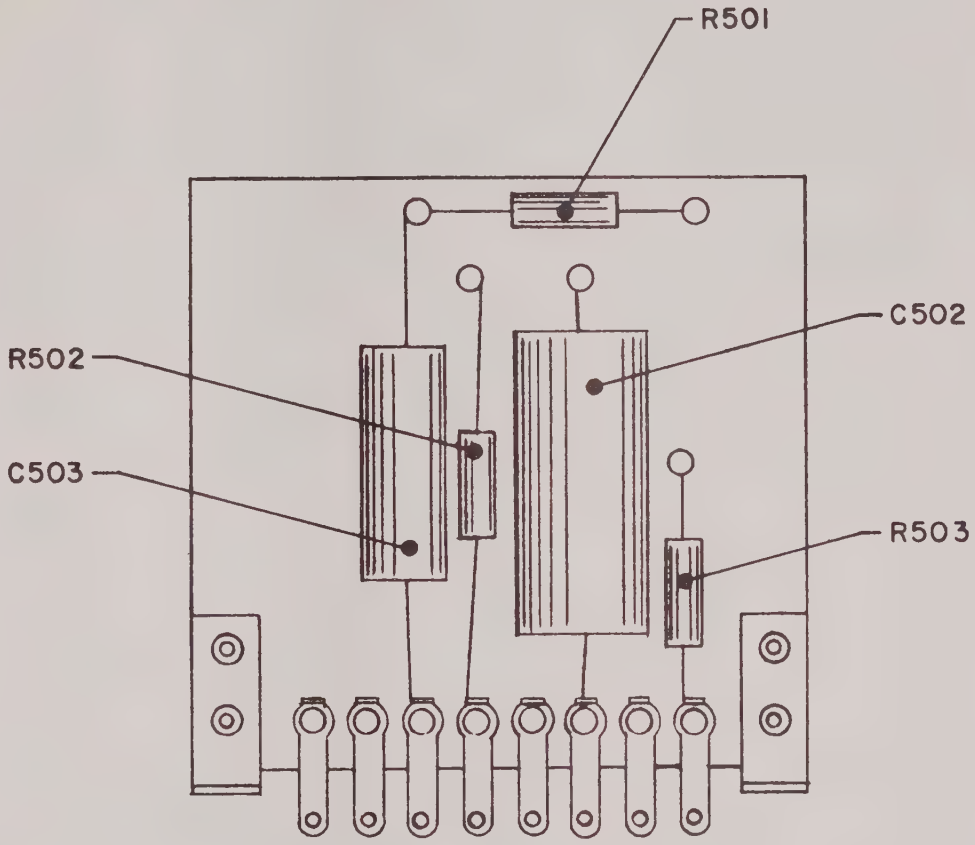
ITEM RB-1	DES. 6-26-61
	APPD J.P.K
MODEL SM 75-5	DFTM R.C.
DWG. No. AM01246	CHKD



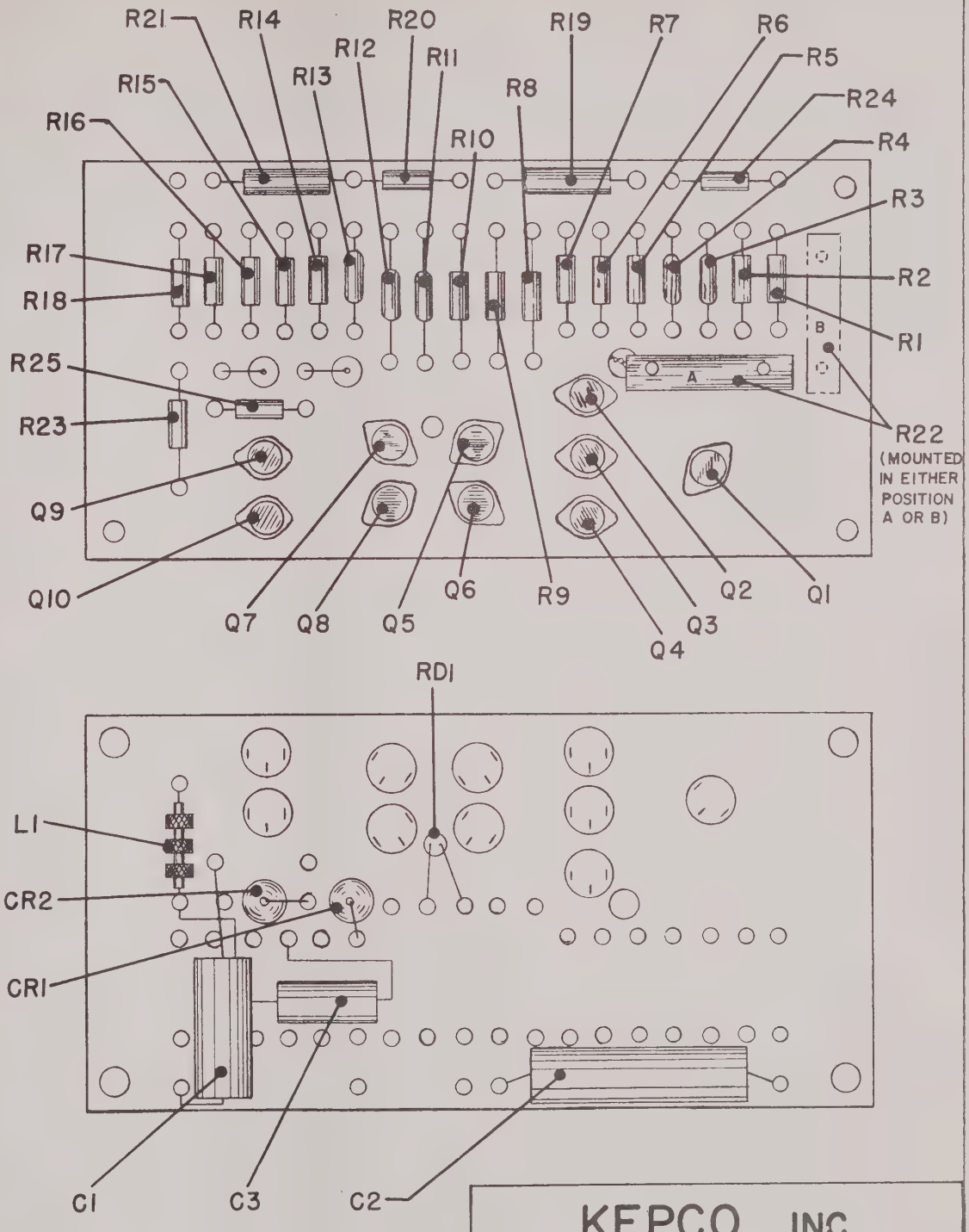


CORRECTIONS, IF ANY, APPEAR ON SHEET ATTACHED TO REAR COVER

KEPCO INC.	
FLUSHING NEW YORK	
ITEM RB-2	DES. 1-3-61
	APPD
MODEL SM—— SERIES	DFTM M.CEA
DWG. No BM00923	CHKD



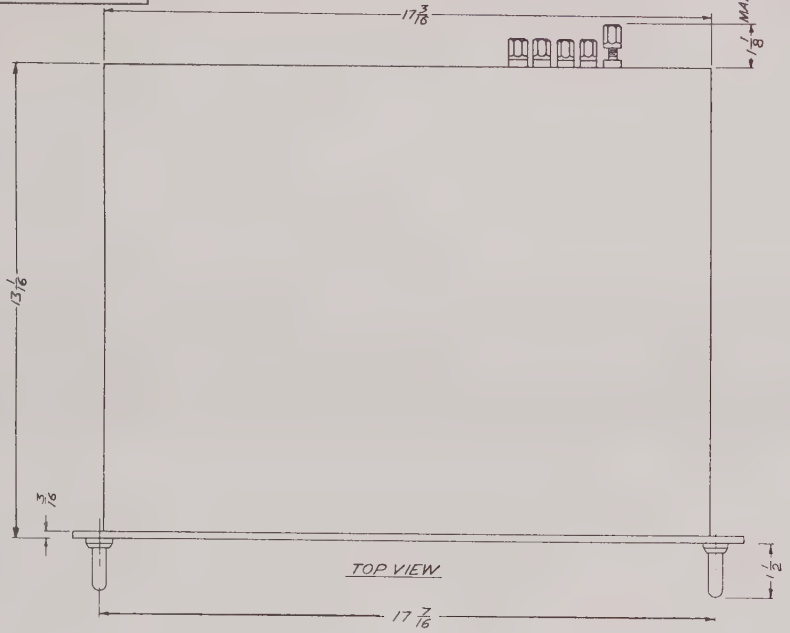
KEPCO INC.	
FLUSHING NEW YORK	
ITEM RB-3	DES.
	APPD J.P.K
MODEL SM 75-5	DFTM M.R / 3/31/61
DWG. No. AM01157	CHKD T. Del



KEPCO INC.	
FLUSHING NEW YORK	
ITEM CONTROL UNIT	DES. 12-6-61
	APPD
MODEL TRAM 31	DFTM M. RAYNER
DWG. No AM01809	CHKD

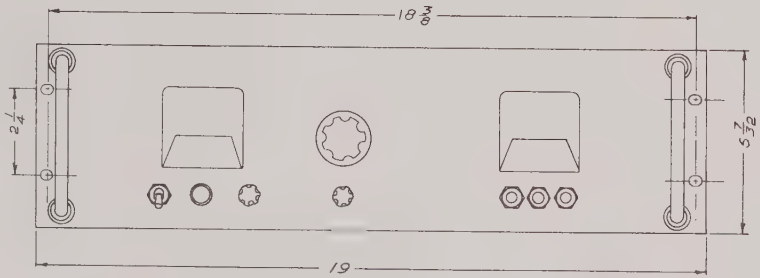
C M01300

REVISIONS	DRAWN	CHKD.	APPD.	DATE



TOP VIEW

SIDE VIEW



FRONT VIEW

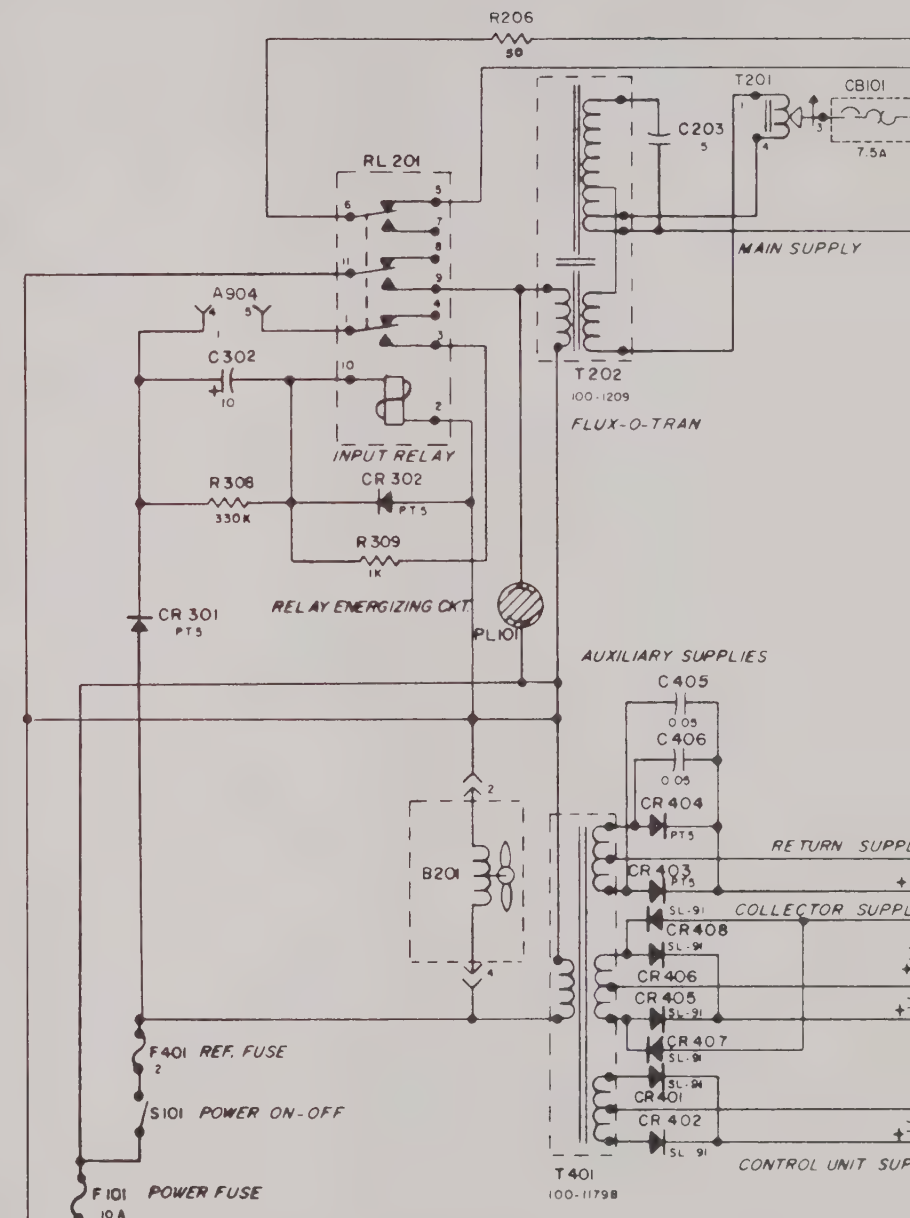
NOTE:
MODELS USED ON
SM-14-15
SM-36-10
SM-75-5
SM-160-2
SM-325-1

KEPCO INC. FLUSHING, N.Y.			
TITLE: OUTLINE DRAWING			
DRAWN: EA	CHECKED: T.D.	APPROVED: [illegible]	DATE: 5-1-61
MODEL NO.: 5¼ SM SERIES		PART NO.	SCALE: —H—
DWG. NO. C M01300			

TOLERANCE UNLESS OTHERWISE SPECIFIED. FRACTIONS ± 1/64 DECIMALS ± .005 ANGLES ± 1/2°

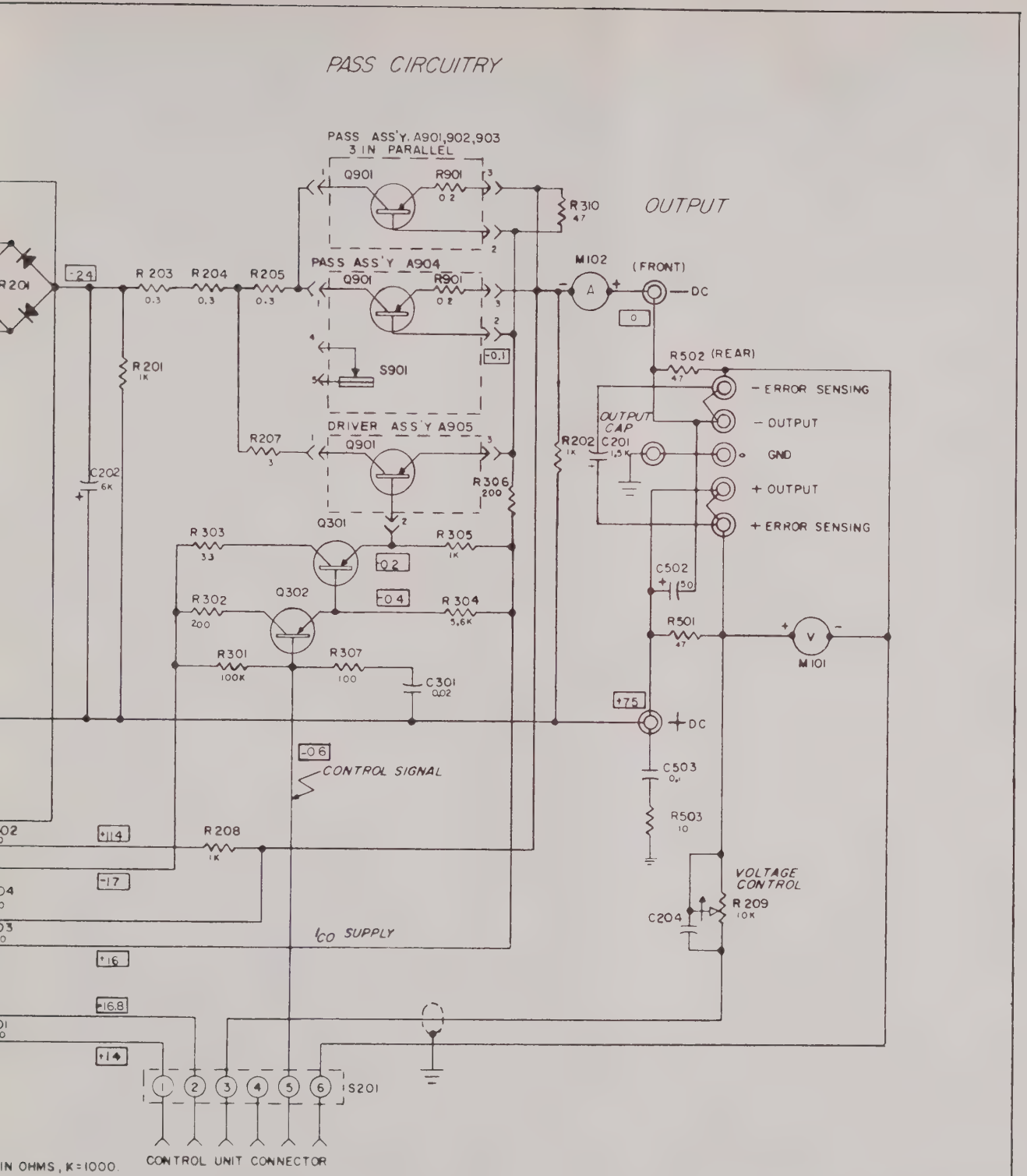
INPUT CONTROL

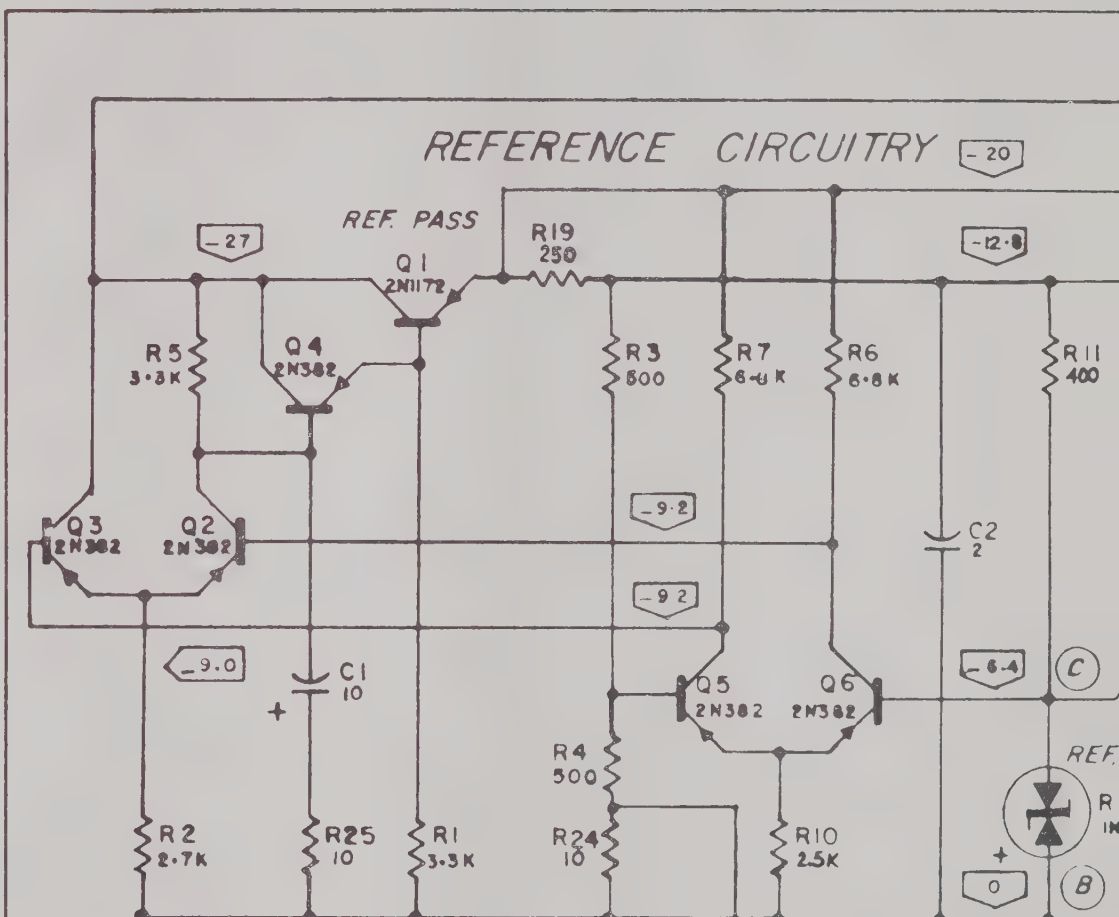
DC SOURCES



NOTE:

1. T201 GANGED TO R209
2. ALL CAPACITOR VALUES ARE GIVEN IN MICROFARADS, RESISTOR VA
3. ALL VOLTAGE READINGS TAKEN WITH 20,000 Ω/VOLT METER, WIT
   MINUS OUTPUT TERMINALS, UNDER THE FOLLOWING CONDITION
   A. LINE = 115 V.A.C.
   B. D.C. OUTPUT = 75 VOLTS
   C. OUTPUT CURRENT = ZERO
4. VOLTAGES ARE TYPICAL AND ARE SUBJECT TO NORMAL COMPO
5. METERS M101, M102 APPLY ONLY TO SM-75-5M AND SM-75
6. ORDER REPLACEMENT PARTS BY KEPCO PART NUMBER PROVIDED IN PARTS LIST SECTION


PASS CIRCUITRY
PASS ASS'Y. A901,902,903
3 IN PARALLEL
Q901
R901
0.2
R310
4.7
OUTPUT
PASS ASS'Y A904
Q901
R901
0.2
M102
(FRONT)
A
DC
-24
R 203
0.3
R204
0.3
R205
0.3
R201
1K
S901
-0.1
0
R502 (REAR)
4.7
- ERROR SENSING
- OUTPUT
GND
+ OUTPUT
+ ERROR SENSING
OUTPUT CAP
R202
1K
C201
1.5K
DRIVER ASS'Y A905
Q901
R207
3
R306
200
C202
6K
Q301
R303
33
R305
1K
-0.2
C502
50
R302
200
Q302
-0.4
R304
3.6K
R501
47
V
M101
R301
100K
R307
100
C301
0.02
+75
DC
-0.6
CONTROL SIGNAL
C503
0.1
R503
10
+14
R208
1K
VOLTAGE CONTROL
R209
10K
C204
-17
+5 SUPPLY
+16
-16.8
+14
S201
1
2
3
4
5
6
CONTROL UNIT CONNECTOR
IN OHMS, K=1000.
ERENCE TO
TOLERANCE
X MODELS.
CONTROL UNIT CONNECTOR
SOCKET (WIRING SIDE)
KEPCO LABORATORIES
FLUSHING
NEW YORK
ITEM
POWER UNIT
MODEL SM-75-5
DWG. No. C-M00786
DES. J.P.K.
APPD. Accepted
DATE M. CEA 11-15-61
CHKD J.P.K.



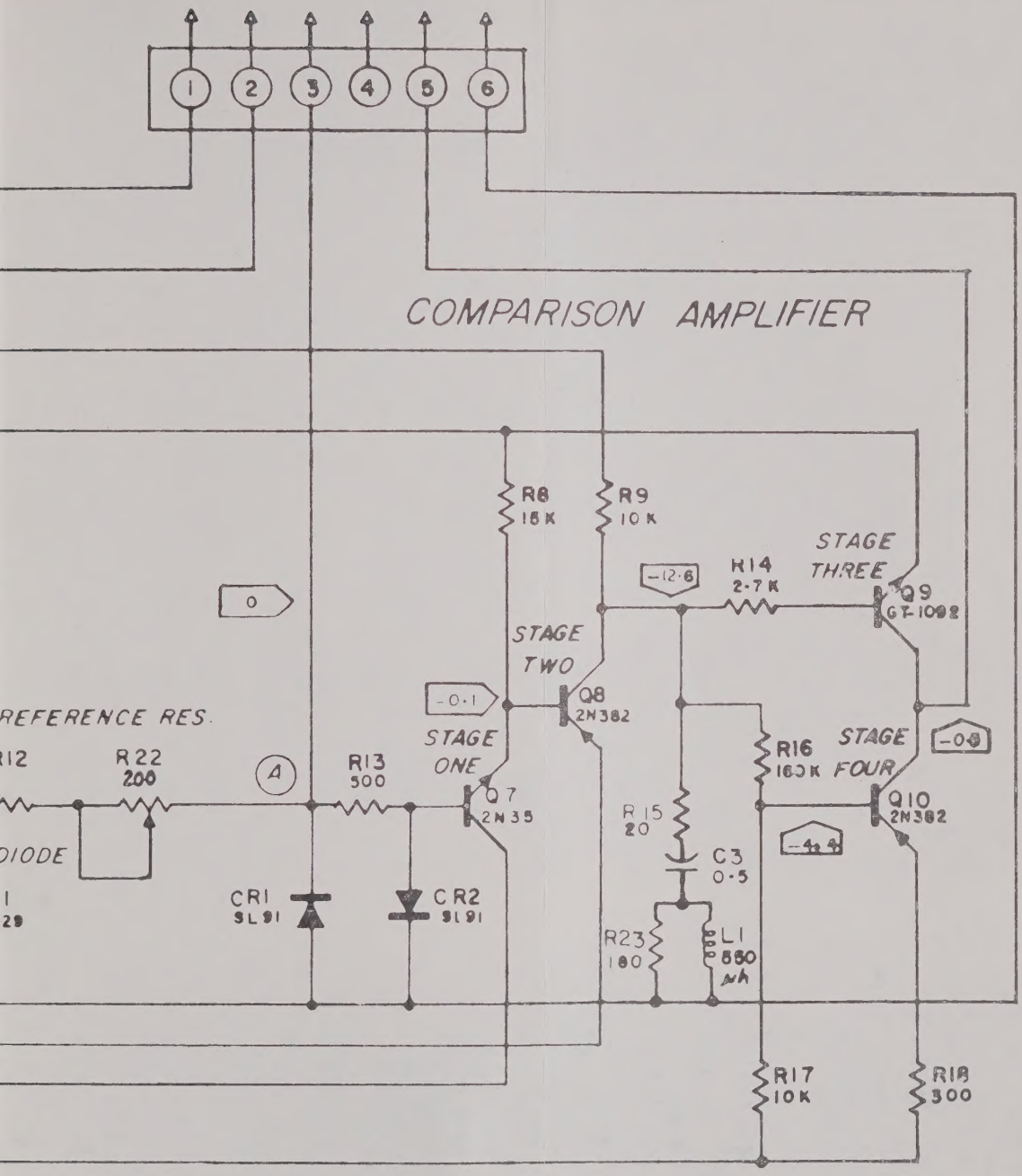
NOTE :

1. ALL VOLTAGES TAKEN UNDER CONDITIONS SPECIFIED ON MAIN SCHEMATIC.
2. ORDER REPLACEMENT PARTS BY KEPCO PART NUMBE PROVIDED IN PARTS LISTS SECTION.

(*) MODELS: SM14-7X; SM14-15X; SM14-30X; SM36-10X; SM36-5X; SM3

(**) MODELS: SM75-2X; SM75-5X; SM75-8X; SM160-2X; SM160-1X; S

(***) MODELS: SM325-1X; SM325-2X



KEPCO INC. FLUSHING, N.Y.			
TITLE: CONTROL UNIT			
DRAWN: C. A.	CHECKED: T.P.K.	APPROVED: A. [illegible]	DATE: 4-20-62
MODEL NO.: TRAM - 31		PART NO.	SCALE
DWG. NO. B M00625			4

-15 X

160-4 X ; SM325-0.5 X

131-38 SANFORD AVENUE • FLUSHING 52, N. Y. • Area Code 212 IN 1-7000 • TWX # NY 4-5196

146-0045 - 1/62 -12M